DOCUMENT RESUME

ED 167 727 CE 018 917

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TITLE Affective Work Competencies, Phase II. Final Report.
SPONS AGENCY Missouri State Dept. of Education, Jefferson City. Research Coordinating Unit.
PUB DATE 31 Jul 78
NOTE 13p.; For a related document see CE 018 918

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Affective Objectives; *Affective Tests; Differences; Educational Objectives; Employee Attitudes; Employment Qualifications; Evaluation Methods; Individual Characteristics; *Job Skills; Laborers; *Occupational Clusters; Occupational Information; Research Needs; Secondary Education; Secondary School Students; Secondary School Teachers; Student Attitudes; Student Characteristics; Supervisors; *Test Construction; Test Interpretation; *Vocational Education
IDENTIFIERS Missouri

ABSTRACT

Phase II of a two-part project, this study was conducted in Missouri to develop a quantitative competency matrix for each of the vocational and technical education service areas represented in Missouri. (A description of both phases of the project appears in CE 018 918.) After a literature search identified the affective work competencies desired by industry and education, an Affective Work Competency Inventory (AWCI) was developed to measure them. Since desired worker competencies vary among different occupations, it was necessary to design a quantitative competency matrix for the twenty-four distinct occupational clusters that exist in Missouri. (Each of these occupational clusters is a component in one of the six vocational service areas.) Nine thousand inventories were printed and administered to workers, supervisors, teachers, and students, representing the twenty-four clusters. Following an analysis of the Inventory's results, it was determined that AWCI scores did differentiate among the occupational clusters. Recommendations for effective use of this data include the following: (1) development of curriculum materials to instruct students in affective work competencies; (2) conduct of experimental programs to determine which teaching methods are effective and to what degree students retain the competencies they acquire; and (3) provision of teacher education programs and inservice workshops to acquaint vocational education teachers with effective methods for teaching the competencies to their students. (Attachments show the occupational matrix and the cluster-occupational index of competency magnitudes.) (ELG)

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FINAL REPORT

AFFECTIVE WORK COMPETENCIES
Phase II

(Project No. 1368)

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Columbia, Missouri

July 31, 1978

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Missouri Department of Education
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CE 018 917

ABSTRACT

Dates: May 1, 1978 to June 30, 1978

Title: Effects of Vocational Education Programs and AWCI-Assessment Feedback on Student Achievement of Affective Work Competencies.

Statement of Problem: To develop a quantitative competency matrix for each of the different vocational and technical education service areas represented in Missouri.

Objectives:

1. Prepare a category-classification system that specifically delineates occupational groups in Missouri.
2. Identify and select representative samples of employed workers within each occupational group.
3. Administer the AWCI to each group.
4. Analyze resulting AWCI-Assessment data to prepare a "Cluster-Occupational Index" of competency magnitudes for each occupational cluster.
5. Perform statistical analysis to test Ho_1.
6. Disseminate results.

Procedures: After thorough review and synthesis of literature and research, a listing of affective work competencies (AWC's) identified by industry and educators was assembled. The AWC Inventory was developed from this listing. Initial content validation and pilot-test reliabilities were established. To delineate the affective competency requisites within each of the vocational and technical occupations, an occupational matrix was designed. Statistically representative samples of students and workers were randomly selected and the inventory standardization was begun. An interim report and journal articles were published to document and disseminate progress of the project.

Results: Multiple regression procedures were used to analyze the variation of Affective Work Competencies Inventory (AWCI) scores for study participants. It was found that the mean composite AWCI scores for occupational cluster areas were significantly different.

Recommendations: For effective utilization of this data, it will be necessary to develop curriculum materials that will help students acquire the identified and quantified affective worker characteristics. Experimental programs should be conducted to determine which instructional procedures are effective and to what degree students retain the affective competencies they acquire.

A. STATEMENT OF PROBLEM

The successful worker's requisites of skill and knowledge are different among occupations. For example, the electronics technician's cognitive and psychomotor requisites are very different from those of an auto mechanic.

A recent literature search has revealed that the necessary affective worker competencies are also different among occupations. To properly utilize the Affective Work Competencies Inventory, a quantitative competency matrix should be developed for each of the different vocational and technical education service areas represented in Missouri.

B. OBJECTIVES

1. Prepare a category-classification system that specifically delineates occupational groups in Missouri.

Result: To facilitate the synthesis of a category-classification system, researchers reviewed state department publications in addition to the following: Standard Industrial Classification text, Bureau of Census Data, Occupational Outlook Handbook, Dictionary of Occupational Titles, Vocational Education and Occupations Handbook.

Major occupational groups were identified and vocational school placement records were utilized to select primary categories. The resulting occupational matrix includes 24 distinct occupational cluster areas (Attachment A).

Comments: Each of the occupational clusters is incorporated as a component within one of the six vocational service areas. The Trade and Industrial service area contains six occupational clusters; the Distributive area contains two occupational clusters; and each of the remaining four service areas contains four occupational clusters.

2. Identify and select representative samples of employed workers within each occupational group.

Results: State Fair Community College's "Statewide Job Placement Service" provided the initial employer identification list. Personnel managers and/or company representatives were contacted: approximately 60 workers were selected for each of the 24 cells within the occupational matrix.

Comments: Both supervisors and workers from rural, urban and suburban areas were asked to participate in the study.

3. Administer the AWCI to each group.

Results: After appropriate quasi-cluster sampling procedures had been established, nine thousand inventories were printed and administered to students, teachers, supervisors and workers throughout Missouri.

Comments: Data collection was insufficient for 3 of the 24 occupational clusters: Community Health Aide, Dental, and Cosmetology.

4. Analyze resulting AWCI-Assessment data to prepare a "Cluster-Occupational Index" of competency magnitudes for each occupational cluster.

Results: The AWCI scores of workers were analyzed according to 24 different occupations from six service areas for each of the fifteen AWC clusters. The scores for each occupation were normalized with the highest numbers representing the greatest degree of affective work competencies possessed. Insufficient data was available for three of the occupations. The results of this analysis revealed that within each of the six service areas, the following occupations scored consistently highest: Sales (Distributive), Production (Agriculture), Secretarial (Business and Office), Medical Emergency Technician (Health), Institutional Management (Home Economics), and Automotive (Trade and Industrial). (Attachment B)

Comments: The normalizing equation is represented below:

$$Y = \alpha + \beta X$$

where X = mean AWCI score for the occupational cluster

β = interval coefficient of 100

α = regression constant of -350

Y = occupational index for AWC

5. Perform statistical analysis to test Ho_1: "There will be no difference in the mean scores of affective work competency magnitudes, as measured by the AWCI for different occupational clusters."

Results: The SAS (Statistical Analysis System) computer procedure provides a multiple regression analysis for balanced or unbalanced data. For the null hypothesis, this procedure was used to ascertain whether or not the variation of the dependent variable (AWCI cluster composite) is statistically significant.

Table I presents the results of the statistical analysis of testing Ho_1.

TABLE I

AWCI VARIANCE ANALYSIS BY OCCUPATIONAL CLUSTER

Source	df	SS	MS	F
MODEL	21	67,650.57	3221.46	2.65*
ERROR	1235	1,499,345.93	1214.05	

* Significant at the 0.0001 level

Comments: For a two-tailed test to be significant at the 0.0001 level, with 21 and 1235 degrees of freedom, an F-value of 2.01 is required. As indicated in Table I, the obtained F-ratio for the dependent variable was 2.65. Consequently, because the mean scores of affective work competency magnitudes for different occupational clusters was significantly different, as measured by the AWCI, Hypothesis 1 was rejected.

6. Disseminate results.

Result: Final dissemination document: (Attachment C)

H.C. Kazanas and D.P. Beach, et. al. Necessary Work Values, Habits, and Attitudes: A Final Report. University of Missouri, 1978.

C. POPULATION AND SAMPLES

The population was limited to randomly selected persons currently residing in Missouri. The following samples were utilized:

1. A statistically representative sample of workers and supervisors with demonstrated Affective Work Competencies. This sample was selected by a random sampling technique. Information on the workers was solicited from immediate work supervisors.

2. A statistically representative sample of twelfth grade vocational students and teachers. This sample was selected by a multi-stage random sampling technique.

3. A statistically representative sample of twelfth grade non-vocational students. This sample was selected through the same method as the vocational student sample.

D. CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Multiple regression procedures were used to analyze the variation of Affective Work Competencies Inventory (AWCI) scores for study participants. It was found that the mean composite AWCI scores for occupational cluster areas were significantly different.*

Recommendations

Empirical data are available regarding the affective characteristics that successful workers possess. For effective utilization of this data, it will be necessary to develop curriculum materials that will help students acquire those identified and quantified affective work competencies. Additionally, experimental programs should be conducted to determine which instructional procedures are effective and to what degree students retain the affective competencies they acquire.

To acquaint vocational and technical education teachers with the educational strategies, teaching methods, and instructional materials that can help them present the affective work competencies more effectively to their students, appropriate teacher education programs, in-service workshops, and related information must be provided.

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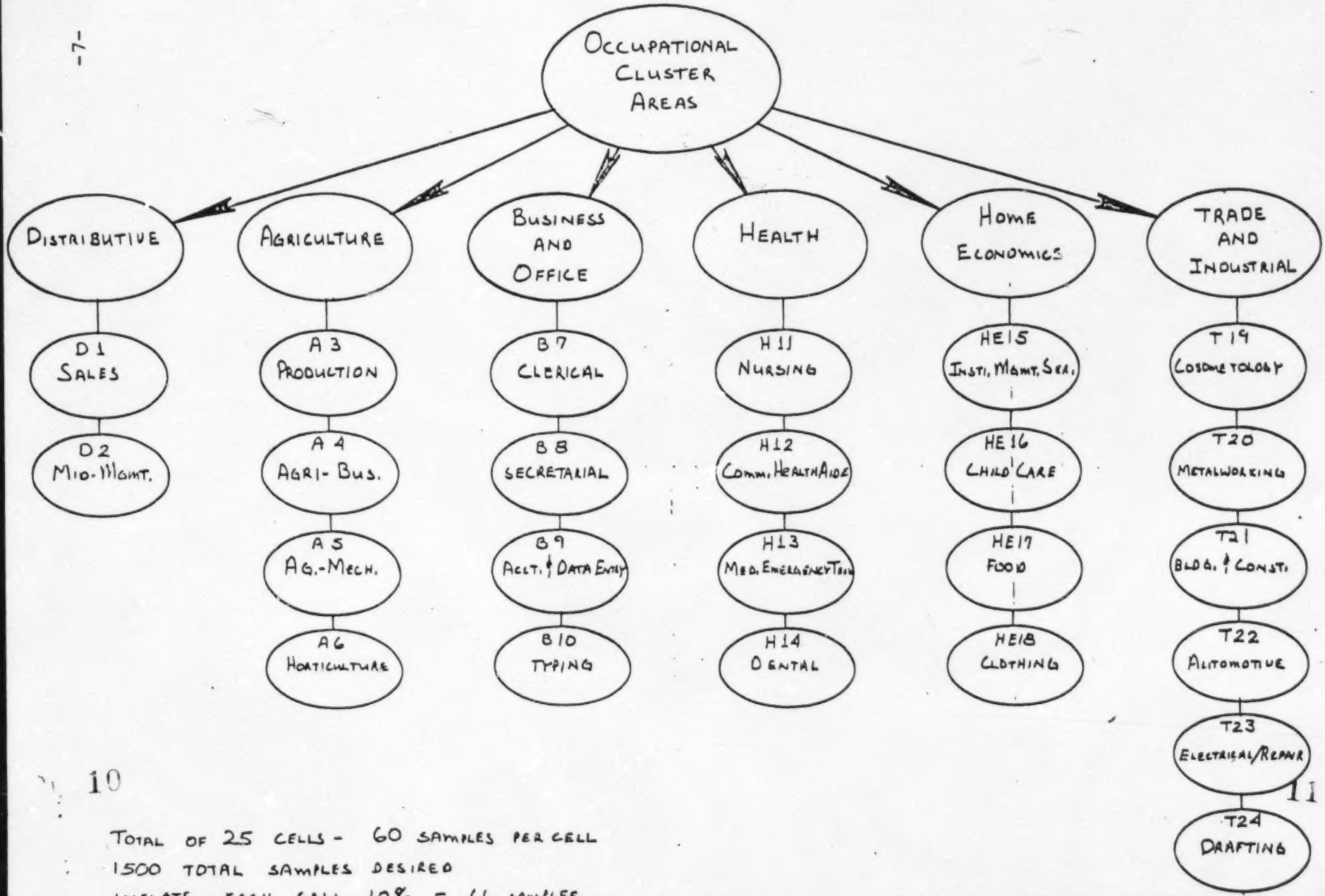
*significant at the 0.0001 level

ATTACHMENT A

Occupational Matrix

OCCUPATIONAL MATRIX



10

11

Total of 25 cells - 60 samples per cell
1500 total samples desired
Inflate each cell 10% = 66 samples

ATTACHMENT B

Cluster-Occupational Index
of Competency Magnitudes

Figure 1 --- Occupational Cluster Indices

AWC CLUSTER

OCCUPATION	Dedicated/Devoted/Honest/Loyal/Conscientious	Efficient/Quantity of Work/Achieving/Speedy	Dependable/Punctual/Reliable/Responsible	Neat/Orderly/Personal Appearance/Manner	Persevering/Patient/Enduring/Tolerant	Emotionally Stable/Judgemental/Poised	Responsive/Follow Directions	Pleasant/Friendly/Cheerful	Careful/Alert/Perceptive	Accurate/Quality of Work	Independent/Initiating	Considerate/Courteous	Adaptable/Resourceful	Cooperative/Helpful	Ambitious
Sales	58	44	70	57	61	54	67	47	62	59	49	48	63	27	65
Mid-Management	60	38	60	70	71	42	57	41	66	47	37	49	77	30	61
Production	70	70	79	60	75	70	58	15	104	75	45	3	75	20	62
Agricultural Business	62	52	65	70	63	60	59	55	71	51	46	39	75	37	68
Agricultural Mechanics	48	37	57	53	45	49	58	48	71	35	39	22	69	18	50
Horticulture	54	50	68	61	65	46	70	58	74	68	46	37	72	37	66
Clerical	65	37	76	74	87	57	86	63	86	49	58	71	94	19	70
Secretarial	77	47	86	82	102	67	90	53	92	64	76	63	100	28	81
Accounting & Data Entry	70	40	71	73	85	55	78	45	75	54	60	57	88	20	72
Typing	35	29	15	-20	25	25	75	25	104	29	20	34	37	-9	32
Nursing	74	50	53	92	69	38	67	73	63	31	43	47	76	29	66
Community Health Aide	Insufficient Data														
Medical Emergency Tech	50	25	41	85	75	41	87	84	75	37	65	59	95	8	40
Dental	Insufficient Data														
Institution Management	60	19	82	85	56	72	93	74	91	45	73	63	93	20	65
Child Care	24	16	63	58	20	50	6	35	83	76	42	27	90	-10	22
Food	69	26	72	68	57	50	82	68	87	42	67	53	86	17	66
Clothing	50	33	50	50	50	50	33	50	50	16	50	50	66	50	60
Cosmetology	Insufficient Data														
Metalworking	56	22	67	72	83	36	67	71	78	47	62	49	77	19	55
Building & Construction	25	28	35	45	50	-4	46	44	50	20	15	25	52	18	32
Automotive	68	36	77	100	83	47	80	64	102	66	63	58	94	27	76
Electrical & Repair	62	27	57	65	60	43	65	60	78	37	43	41	88	14	56
Drafting	70	27	83	57	96	62	100	79	85	77	60	54	68	20	85
Supervisors	52	48	70	80	79	50	65	55	87	43	43	48	81	34	82